REMARKS

Claims 1-17, 19-28, and 30-32 are pending in the present application. In the Office Action mailed January 26, 2010, the Examiner rejected claim 30 under 35 U.S.C. §112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which Applicant regards as the invention. The Examiner next rejected claims 1 and 4-16 under 35 U.S.C. §102(b) as anticipated by or, in the alternative, under 35 U.S.C. §103(a) as obvious over Atalar et al. (USP 6,628,980 – hereinafter Atalar). Claims 2, 3, 26-28, and 30-32 were rejected under 35 U.S.C. §103(a) as being unpatentable over Atalar in view of Nevo (USP 6,516,213). Claims 17 and 19-25 were rejected under 35 U.S.C. §103(a) as being unpatentable over Gupta et al. (USP 6,292,683) in view of Atalar and Nevo.

Claims 1 and 26 have been amended to correct typographical errors. No new matter has been added.

Rejection under 35 U.S.C. §112, second paragraph

The Examiner rejected claim 30 under 35 U.S.C. §112, second paragraph. Applicant has amended claim 30 to overcome the rejection under 35 U.S.C. §112, second paragraph. Applicant believes that amended claim 30 distinctly claims the subject matter which Applicant regards as the invention. No new matter has been added. Accordingly, Applicant requests withdrawal of the rejection of claim 30 under 35 U.S.C. §112, second paragraph.

Rejection under 35 U.S.C. §102(b) as anticipated by Atalar

The Examiner rejected claims 1 and 4-16 under 35 U.S.C. §102(b) as anticipated by Atalar. In the alternative, the Examiner also rejected claims 1 and 4-16 under 35 U.S.C. §103(a) as being obvious over Alatar. The Examiner stated that he had "applied this type of rejection because the present claim language is broad and is open to plural interpretations." *Office Action*, 01/26/2010, pg. 5. Specifically, the Examiner stated that " 'a gap formed between the plurality of RF coils and the housing. . .' is an ambivalent claim limitation. That is, the limitation leads one of ordinary skill in the art to interpret the claim to mean a gap formed between the plurality of RF coils and the housing from the compressed state." *Id.* at pg. 9.

According to the Examiner, "[O]ne of ordinary skill in the art would interpret the gap formed between the plurality of expanded RF coils and the housing to be met by the expanded loop coils of Atalar." *Id.* at pg. 5. The Examiner relied on Atalar as teaching that the "distal region comprises an imaging coil (644), comprising a plurality of RF coils (607a, 607b) that are

expandable when tubular member (698) is retracted." *Id.* at pg. 3. According to the Examiner, the coil (804) of Atalar "forms a gap between the coil (804) and the nested expandable probe (870)." *Id.* The Examiner stated that "the gap between the housing and the coil (804) is configured to increase RF sensitivity away from the coil." *Id.*

The Examiner further stated that "if the claim is interpreted to mean a space between a RF coil and member to which it is attached then the Examiner stands that the presently claimed structure is a mere obvious variant of Atalar." *Id.* at pg. 9.

> However, if it is interpreted that Atalar does not expressly teach the gap formed between the plurality of expanded RF coils, there is nothing in [*sic*] disclosure to show why the multiple expandable coils, comprising nitinol surrounded by an insulating material, of Atalar for is [*sic*] not an obvious variant of the present application's gap formed between the RF coils and housing, where the housing comprises nitinol and the gap comprises an insulating material because both achieve the same function of increasing RF sensitivity away from the probe.

Id. at pg. 5.

Applicant respectfully disagrees with the Examiner and believes the Examiner has improperly stretched the teachings of Atalar in order to reflect that called for in claim 1. As set forth in detail below, Atalar does not teach the structural limitations of claim 1, nor are those structural limitations mere obvious variants of the teachings of Atalar.

Atalar discloses numerous embodiments of an imaging device with an expandable loop imaging coil and sleeve. For example, FIG. 6 includes an expandable loop imaging coil (644) and a tubular member (698) that slides between extended and retracted positions. *See Atalar*, col. 13, lns. 49-53. "When the second tubular member (698) is in its retracted state, the expandable loop imaging coil (604) is in its expanded state." *Id.* at col. 13, lns. 55-57. As illustrated in FIG. 6B, "the expandable imaging loop (644) can comprise a core (650) surrounded and encased by an insulator (648). In one embodiment, the insulator (648) comprises polymeric tubing. The core (650) is a pre-shaped superelastic electrically conducting material or metal...." *Id.* at col 13, ln. 65 – col. 14, ln. 3. In another embodiment, Atalar discloses an expandable probe 870 comprising a coil region 804 and a tubular member or sheath 802. *Id.* at FIG. 8A, *see also* col. 16, lns. 12-37. "[T]he coil region (804) may be brought into its expanded state by retracting the tubular member (802) to expose the coil region (804)." *Id.* at col. 16, lns. 28-31. The imaging loop or coil assembly may comprise a pair of coils, as coils (607A/607B) of coil assembly (604) shown in FIG. 6D.

Claim 1 calls for, in part, a self-expanding housing insertable into a subject to be imaged and constructed to permit fluid flow therethrough, a plurality of RF coils attached to the housing, and wherein a gap formed between the plurality of RF coils and the housing is configured to increase RF sensitivity away from the probe.

Atalar does not teach a plurality of RF coils and a self-expanding housing as called for in claim 1. While Atalar may disclose a dual coil assembly (604) in FIG. 6D that comprises coils (607A/607B), Atalar does not teach that coils (607A/607B) are attached to a self-expanding housing as specifically called for in claim 1. In fact, Atalar does not even disclose a self-expanding housing with respect to a multiple coil embodiment. Instead, Atalar merely teaches that coils (607A/607B) transition to their expanded state when second tubular member (698) is retracted. *See Atalar*, col. 14, lns. 30-44. At best, Atalar discloses in FIG. 6B a single coil embodiment wherein the coil comprises a nitinol core (650) and insulator (648).

Atalar further fails to teach or suggest an imaging assembly wherein a gap formed between the plurality of RF coils and the housing is configured to increase RF sensitivity away from the probe as called for in claim 1. In the Office Action, the Examiner stated that the "housing comprises nitinol and the gap comprises an insulating material because both achieve the same function of increasing RF sensitivity away from the probe." *Office Action*, pg. 5. Applicant respectfully disagrees. As set forth above, FIG.6B of Atalar discloses imaging coil (604) that is an expandable imaging coil (644) that comprises two elements: a core (650) that is surrounded and encased by an insulator (648). *See Atalar*, col 13, ln. 65 – col. 14, ln. 3. In the Office Action, the Examiner relied on the core (650) (i.e., the nitinol) to teach the housing and stated that the insulator (648) formed a gap. However, the core (650) and insulator (648) of Atalar together form the coil (604)/(644). Atalar does not teach additional elements that may be called a plurality of RF coils that are positioned with respect to the core such that a gap is formed between the plurality of RF coils and the core. In fact, Atalar does not teach that anything is positioned at the outer surface of the insulator (648).

Accordingly, Atalar does not teach each and every element called for in claim 1. As such, Atalar cannot be considered anticipatory under 35 U.S.C. §102(b). Further, as Atalar does not even teach or suggest a plurality of RF coils attached to a self-expanding housing as claimed, the subject matter of claim 1 cannot be considered an obvious variant of Atalar. Accordingly, Applicant respectfully requests withdrawal of the rejection of claim 1, along with all claims depending therefrom.

Rejection under 35 U.S.C. §103(a) over Gupta et al. in view of Atalar and Nevo

Claim 17 was rejected under 35 U.S.C. §103(a) as being unpatentable over Gupta et al. in view of Atalar and Nevo. In the Office Action, the Examiner relied on Atalar to teach an imaging coil (644) "comprising a plurality of RF coils (607a,607b) that are expandable when tubular member (698) is retracted." *Office Action*, pg. 7. The Examiner further stated that "Atalar teaches that the housing comprises a first pair of bars and a second pair of bars in first and second orthogonal planes forming the first and second RF loop coils, comprising a high memory nitinol and insulating material (col. 14, ll. 30-67 refs 607A-B: Regarding this limitation, see above obvious variation argument)." *Id.* at pg. 8. While Applicant does not necessarily agree with the Examiner's rejection, Applicant has elected to amend claim 17 to clarify the connection between the plurality of RF coils and the intra-cardiac catheter.

As amended, claim 17 calls for, in part, an intra-cardiac catheter constructed to automatically expand to an expanded position from a compressed position, and a plurality of RF coils connected to the catheter, wherein the intra-cardiac catheter is configured to automatically expand the plurality of RF coils to an expanded position from a compressed position.

FIG. 6D, to which the Examiner referred, illustrates an expandable imaging loop (604) that comprises two imaging loop coils (607A/607B) that "may be nested in their collapsed state in a substantially orthogonal manner similar to that illustrated in FIG. 4A." *Atalar*, col. 14, lns. 32-35. As discussed in detail with respect to claim 1, Atalar does not teach that coils (607A/607B) are attached to a housing. Likewise, Atalar does not teach that coils (607A/607B) are connected to an intra-cardiac catheter or any other structure that is configured to automatically expand to an expanded position from a compressed position and is configured to automatically expand the plurality of RF coils to an expanded position from a compressed position as called for in claim 17. That is, Atalar does not teach or suggest a structure that itself expands and that causes the expansion of a plurality of RF coils that are connected to the structure. While Atalar may disclose a coil assembly comprising a core (650) and insulator (648), Atalar teaches that the core and insulator together form the coil. That is, Atalar does not teach additional elements that may be called a plurality of RF coils connected to the core.

Gupta et al. and Nevo also fail to teach or suggest the catheter/RF coil arrangement called for in claim 17. Accordingly, a combination of the art of record likewise fails to teach or suggest the subject matter as claimed. Thus, Applicant respectfully requests the withdrawal of the rejection of claim 17 under 35 U.S.C. §103(a), along with all claims depending therefrom.

Rejection under 35 U.S.C. §103(a) over Atalar in view of Nevo et al.

The Examiner rejected claim 26 under 35 U.S.C. §103(a) as being unpatentable over Atalar in view of Nevo et al., stating that "Atalar et al. '980 teaches all the limitations of the claimed invention (see above) except for expressly teaching that a tracking coil is configured to transmit tracking signals for gating data acquisition. Atalar also does not expressly teach that the device is an intra-cardiac device." *Office Action*, pgs. 5-6. Applicant respectfully disagrees.

Claim 26 calls for, in part, a method comprising inserting an intra-cardiac MR imaging device into a sheath configured for insertion into an imaging subject to be scanned, the imaging device comprising an MR tracking coil and comprising a pair of RF coils attached to an auto-expandable former, positioning the imaging device within the imaging subject to be scanned, and retracting the sheath to allow the former to automatically expand the pair of RF coils to an expanded position.

As discussed in detail above, Atalar does not teach or suggest a pair of RF coils attached to a self-expanding structure that itself expands and causes the pair of RF coils to expand. Instead, at best, FIG. 6D of Atalar illustrates an imaging loop (604) comprising a pair of coils (607A/607B) configured to rotate to an expanded position when a tubular member (698) is retracted. *See Atalar*, col. 14, lns. 30-45. Atalar does not teach that coils (607A/607B) are attached to an auto-expandable former as called for in claim 26. Likewise, Atalar does not teach retracting a sheath to allow a former to automatically expand a pair of RF coils to an expanded position.

Nevo et al., which relates to determining instantaneous location of an object, likewise fails to teach the steps of inserting, positioning, and retracting as called for in claim 26. Accordingly, the Examiner's combination of references fails to teach or suggest the limitations of claim 26. Therefore, Applicant respectfully requests withdrawal of the rejection of claim 26 and all claims depending therefrom.

Therefore, in light of at least the foregoing, Applicant respectfully believes that the present application is in condition for allowance. As a result, Applicant respectfully requests timely issuance of a Notice of Allowance for claims 1-17, 19-28, and 30-32.

Applicant appreciates the Examiner's consideration of these Amendments and Remarks and cordially invites the Examiner to call the undersigned, should the Examiner consider any matters unresolved.

Respectfully submitted,

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Dated: April 21, 2010
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General Authorization and Extension of Time

The Commissioner is hereby authorized to charge any additional fees which may be required regarding this application under 37 C.F.R. §§ 1.16-1.17, or credit any overpayment, to Deposit Account No. 07-0845. Should no proper payment be enclosed herewith, as by credit card authorization being in the wrong amount, unsigned, post-dated, otherwise improper or informal or even entirely missing, the Commissioner is authorized to charge the unpaid amount to Deposit Account No. 07-0845. If any extensions of time are needed for timely acceptance of papers submitted herewith, Applicant hereby petitions for such extensions under 37 C.F.R. §1.136 and authorizes payment of any such extensions fees to Deposit Account No. 07-0845. Please consider this a general authorization to charge any fee that is due in this case, if not otherwise timely paid, to Deposit Account No. 07-0845.

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